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09/994,475	11/26/2001	Gene Ciancaglini	MAL-002AUS	7235

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EXAMINER

KIM, DAVID S

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/994,475

Applicant(s)

CIANCAGLINI ET AL.

Examiner

David S. Kim

Art Unit

2633

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
4a) Of the above claim(s) 1-7 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 8-26 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 26 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 6/17/02, 2/14/05.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election **without** traverse of **claims 8-26** (Invention II) in the reply filed on 04 November 2005 is acknowledged. Accordingly, **claims 1-7** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

In claim 23, the "control message *processor*" and the "scheduler timing *processor*" are not shown. No corresponding processors are shown in the figures.

In claim 24, the "scheduler authorization message processor" is not shown. No corresponding processor is shown in the figures.

In claim 25, the limitation "wherein the control and data channels are carried over *separate physical media*" is not shown. The figures and the specification (p. 9, l. 3) show these channels carried over the same physical media.

In claim 26, the data channels and control channels are not shown to be distinguished by polarization, coding, timeslots, or spatial division multiplexing over distinct physical media. Rather, the figures only show the channels to be distinguished by wavelength.

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be

Art Unit: 2633

necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

4. **Claims 13 and 15-22** are objected to because of the following informalities:

In claim 13, the limitation "wherein 'immediately or after a delay known to both the scheduler and the node' transmitting information" lacks antecedent basis.

In claim 15, the "receiving" limitation lacks antecedent basis.

In claims 16-19, "control messages" is used where -- control packets -- may be intended.

Claim 18 depends on "Claim 15" where -- Claim 17 -- may be intended. Otherwise, antecedent basis for the "second control" limitation is lacking.

Claim 19 unnecessarily uses reference characters "13" and "16".

In claims 20-21, "transmitting control packets" is used where -- transmitting a control packet -- or -- transmitting the control packet -- may be intended. Otherwise, antecedent basis is lacking.

Claim 21 depends on "Claim 10" where -- Claim 20 -- may be intended. Otherwise, antecedent basis for the "headend" limitation is lacking.

Claim 22 depends on "Claim 10" where -- Claim 21 -- may be intended. Otherwise, antecedent basis for the "SAM" limitation is lacking.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2633

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. **Claims 8-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over Modiano et al. ("Design and analysis of an asynchronous WDM local area network using a master/slave scheduler", hereinafter "Modiano").

(**claim 8**) Modiano discloses a medium access protocol (MAC) for a WDM LAN (abstract), a scheduler (abstract), a control channel (channel on wavelength c in Figs. 1-2), a data channel (any suitable channel in Fig. 1), and nodes coupled to the control channel and the data channel (hub and terminals in Fig. 1).

Modiano's MAC also comprises a control message transmitting step (p. 901, col. 2, last paragraph, l. 3-4, the scheduler schedules transmission requests and informs OTs with transmission instructions). This control message specifies one of the nodes as a source node (when a node receives a transmission assignment, this reception indicates that it is a source node for a transmission, p. 901, col. 2, last paragraph). This control message also specifies another one of the nodes as a destination node (e.g., the assignment for queue 1 in Fig. 5 is a transmission assignment for node 1 to transmit to node 3). This control message also specifies a value that corresponds to an amount of information that the source node can transmit (i.e., the transmission assignment implies the communication of a command value that instructs the node to transmit an amount of information, p. 901, col. 2, last paragraph; this amount corresponds to a slot, p. 903, col. 1, last paragraph, p. 904, last paragraph). After this transmitting step, the MAC comprises a step of waiting (e.g., in the case of unassigned node 3 in queue 3 in Fig. 5, node 3 waits for the next potential assignment; e.g., it is implied that the hub waits at least one slot before sending another transmission assignment to a particular node, p. 901-902, bridging paragraph,

Art Unit: 2633

otherwise, the node would switch transmission assignments before completing its first assignment) a predetermined period of time related to the value specified in the first control message (e.g., if node 3 is unassigned for one slot, node 3 would wait the duration of that slot for the next potential assignment, p. 904, col. 1; e.g., the hub would wait at least one slot).

Modiano does not expressly disclose that the control message is a packet. However, a packet is one of the most common transmission structures for network communications. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to embody the control message in a packet. One of ordinary skill in the art would have been motivated to do this since the nodes already receive communication through packets (p. 904, col. 2, last paragraph). That is, this implies that the nodes already possess infrastructure for receiving communication through packets.

(claim 9) Modiano discloses:

The protocol of Claim 8 further comprising:

receiving the control packet at each of the plurality of nodes in the network (the star in Fig. 1 distributes the control wavelength to all the nodes); and

in response to the source node receiving the control packet, transmitting (p. 901, col. 2, last paragraph) from the source node onto the data channel an amount of information not greater than the amount specified in the control packet (nodes are assigned to transmit an amount corresponding to a slot, e.g., p. 904, col. 2, last paragraph).

(claim 10) Modiano discloses:

The protocol of Claim 8 wherein in response to the destination node specified in the control packet receiving the control packet, the destination node monitors (Fig. 2, tunable receivers in destination nodes have to tune to the appropriate wavelength to properly receive from the data channel) the data channel for the bytes following the control packet (control information to transmit during a particular transmission slot is received before the start of the transmission slot, p. 903, col. 1, last paragraph, so reception occurs following the control information).

(claim 11) Modiano discloses:

Art Unit: 2633

The protocol of Claim 9 wherein the destination node specified in the control packet retrieves data from the data channel of the network (any suitable channel in Fig. 1).

(claim 12) Modiano discloses:

The protocol of Claim 8 wherein the amount of information specified in the control packet corresponds to a predetermined number of data packets (p. 904, col. 2, last paragraph).

(claim 13) Modiano discloses:

The protocol of Claim 8 wherein “immediately or after a delay known to both the scheduler and the node” transmitting information includes immediately or after a delay known to both the scheduler and the node transmitting one or more data packets (e.g., p. 901-902, bridging paragraph).

(claim 14) Modiano discloses:

The protocol of Claim 8 wherein in response to the node to which the control packet is addressed receiving the control packet, immediately or after a delay known to both the scheduler and the node transmitting no more bytes than are permitted by the control packet (transmission is limited to a slot, p. 903, col. 1, last paragraph, p. 904, col. 2, last paragraph).

(claim 15) Modiano does not expressly disclose:

The protocol of Claim 8 wherein receiving the first control packet at each of the plurality of nodes in the network includes passively tapping the control channel at each of the plurality of nodes in the network to receive the first control packet.

However, note the receiver coupling/tapping shown in the nodes in Fig. 2. Such coupling/tapping is conventionally passive.

(claim 16) Modiano does not expressly disclose:

The protocol of Claim 8 wherein the **value** in the control packet corresponds to **a number of bytes** the source node can transmit and the predetermined period of time corresponds to the amount of time required for the source node to transmit the **byte-times specified in the control message**.

However, limiting transmission is part of the basic functions in a MAC. At the time the invention was made, it would have been obvious to correspond the value in the control packet to a number of bytes. One of ordinary skill in the art would have been motivated to do this to limit the nodes from transmitting

Art Unit: 2633

more than one slot. That is, transmitting more than one slot could lead to conflicts in transmission assignments and reception assignments. Accordingly, the predetermined period of time (duration of a slot) of Modiano would correspond to the time required for the source node to transmit the byte-times specified in the control message.

(claim 17) Modiano discloses:

The protocol of Claim 14 wherein after waiting for the predetermined period of time dispatching a second control message (e.g., in the case of unassigned node 3 in queue 3 in Fig. 5, note that another assignment message will follow for the next slot, p. 904, col. 1).

(claim 18) Modiano discloses:

The protocol of Claim 15 wherein at least one of the source node (e.g., queue 3 corresponds to node 3 in Fig. 5) and the destination node specified in the second control message is different than the source node (e.g., queue 2 corresponds to node 2 in Fig. 5) and the destination node (e.g., assignment of destination node 1 for queue 2 in Fig. 2) specified in the first control message.

(claim 19) Modiano discloses:

The MAC protocol of Claim 8 wherein the control channel and the data channel are carried by the same fiber (any suitable fiber link in Fig. 1) and wherein the control messages on the control channel are “out-of-band” (separate control wavelength c in Figs. 1-2) from the data on the data channel.

(claim 20) Modiano discloses:

The MAC protocol of Claim 8 wherein transmitting control packets includes transmitting control packets from a headend (hub in Fig. 1) of the network.

(claim 21) Modiano discloses:

The MAC protocol of Claim 10 wherein transmitting control packets from a headend of the network includes the headend dispatching a scheduler allocation message (SAM) (e.g., messages from scheduler in Fig. 1).

(claim 22) Modiano discloses:

The MAC protocol of Claim 10 wherein the SAM specifies a source node address (e.g., designation for transmitting node/queue in Fig. 5), a destination node address (e.g., designation for receiving node in

Art Unit: 2633

Fig. 5), and at least one of: (a) the number of bytes (simply divide the slot size by the size of a byte) the source node may transmit to the destination node; and (b) the amount of time the source node may transmit (one slot at a time, e.g., p. 904, col. 2, last paragraph).

(claim 23) Claim 23 is an apparatus claim that corresponds largely to the method claim 8. Therefore, the recited limitations in method claim 8 read on the corresponding limitations in apparatus claim 23. Claim 23 also includes limitations absent from claim 8. Modiano discloses some of these limitations:

- the optical path having a first end and a second (any suitable ends of the optical paths in Fig. 1);
- the time period corresponding to a data transmission time for a node (one slot at a time, p. 903, col. 1, last paragraph); and

- waiting a period of time corresponding to the allotted data transmission time for node prior to releasing another control message (e.g., it is implied that the hub waits at least one slot before sending another transmission assignment to a particular node, p. 901-902, bridging paragraph, otherwise, the node would switch transmission assignments before completing its first assignment).

Modiano does not expressly disclose:

- the control message **processor** and

- the scheduler timing **processor**, in communication with said control message processor, said scheduler timing processor for causing said control message processor to perform said waiting step above.

However, processors are extremely well known in the art for implementing networks, like the network of Modiano. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement a control message processor and a scheduler timing processor. One of ordinary skill in the art would have been motivated to do this since computing functions, like the control message function and the scheduler timing function, are conventionally implemented by processors. Accordingly, since the scheduler timing function of Modiano (e.g., p. 903-904, section C) controls the timing of control communication with the nodes, the scheduler timing processor would be in

Art Unit: 2633

communication with the control message processor and would control the timing of the control message processor, such as the waiting step above.

(claim 24) Modiano does not expressly disclose:

the scheduler authorization message (SAM) **processor**.

However, similar to the treatment of claim 23 above, implement such a processor for the SAM function of Modiano would be obvious.

(claim 25) Modiano does not expressly disclose:

The network of Claim 23 wherein the control and data channels are carried over separate physical media.

However, such a configuration is well known in the art as an obvious variation of the channel arrangement of Modiano.

(claim 26) Modiano discloses:

The network of Claim 23 wherein the individual data channels and control channels are distinguished by one of: wavelength (different wavelength for data and control channels in Fig. 1), polarization, coding, timeslots, and spatial division multiplexing over distinct physical media.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Chan et al. and Modiano ("Random algorithms for scheduling multicast traffic in WDM broadcast-and-select networks") cited to show other teachings related to Modiano above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David S. Kim whose telephone number is 571-272-3033. The examiner can normally be reached on Mon.-Fri. 9 AM to 5 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2633

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DSK


M. R. SEDIGHIAN
PRIMARY EXAMINER